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SOUTH COUNTY JOINT PLANNING PROGRAM

City of Morgan Hill City of Gilroy County of Santa Clara

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WATER QUALITY

BACKGROUND REPORT

FOR THE

SOUTH COUNTY JOINT PLANNING PROGRAM

PREPARED BY: LORRAINE J. POGGIONE, ERIC CARRUTHERS

COUNTY OF SANTA CLARA

DEPARTMENT OF LAND USE AND DEVELOPMENT

OFFICE OF PLANNING

Adopted: May 12, 1985

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5. WATER SUPPLY AND QUALITY

Natural Water System and Supply

- 5.1. One hundred percent of South County's water needs are presently met by groundwater.
- 5.2. The water is drawn from underground aquifers which are water bearing strata located in both confined (water bearing strata overlayed by relatively impermeable geologic formations) or unconfined (not protected by impermeable geologic formations) subsurface zones of the Llagas Subbasin.
- 5.3. Water reaches the aquifers via percolation through the soils. The sources of water that replenish the aquifers are from rainfall and runoff (natural recharge), and from locally conserved and imported water (artificial recharge).
- 5.4. Importation of water from the San Felipe Division of the Central Valley Water Project will be recharged into the South County groundwater subbasin when the project is completed in 1987 - 1988. Imported water is not currently being used or recharged into the South County groundwater subbasin.
- 5.5. According to the Santa Clara Valley Water District, when the San Felipe water project is completed, the District will increase its groundwater recharge of the Llagas groundwater subbasin according to South County's need, and this increase should dilute and eventually flush out existing nitrate concentrations in the subbasin.
- 5.6. Water is drawn for agricultural, domestic, industrial and commercial uses from large and small public wells and private wells, totaling approximately 4000 wells.

Existing Contamination

- 5.7. Nitrate concentrations (which are not organic contaminants) have been found in Morgan Hill, Gilroy, and San Martin Wells, some in low concentrations (below the State maximum contaminant level of 45 mg/l) and others in high concentrations, such as 88 mg/l in areas outside the City of Gilroy. The location and concentration of nitrates continues to be of concern in South County and presents a particular hazard to infants less than 6 months of age and possibly to pregnant women.
- 5.8. Organic chemical contaminants such as PCE (Perchloroethylene -dry cleaning chemical), and TCA (Trichloroethane-degreaser used in septic and in some commercial and industrial uses), have been found in the water in low concentrations (below State action levels) as a result of well testing by the City of Gilroy).



- 5.9. The lower aquifers, where most of the drinking water comes from, have not yet been found to exceed state action levels for PCE, TCA, and other organic pollutants according to the Santa Clara Valley Water District. However, some wells in the lower aquifers have been found to exceed State maximum contaminant levels for nitrates.
- 5.10. According to the Gavilan Water Conservation District, a recent study has questioned the likelihood of organics being present in the Llagas subbasin. Further studies are taking place to determine if such contaminants exist in the groundwater.

Points of Vulnerability

- 5.11. Contaminants have easy access to groundwater in:
- a. Areas of high groundwater where conduits (i.e. wells) or highly permeable soils serve as a pathway for contaminants in the surface water to travel to the groundwater.
 - b. Areas of rapid percolation where the soils rapidly percolate contaminated water.
 - c. Areas susceptible to flooding where a conduit, flood waters and/or highly permeable soils serve as a pathway for contaminants in the surface water to reach the groundwater.
 - d. Surface water areas where streams, reservoirs, and recharge ponds serve as sources of replenishing the groundwater without the capacity to distinguish uncontaminated from contaminated waters.
 - e. Areas upgradient of the confined aquifer (around Morgan Hill and San Martin) where the aquifer is unprotected by impermeable layers that normally would shield the aquifer from receiving contaminated waters.
 - f. Abandoned unused wells, and functioning wells that can act as conduits to transfer contaminated water from the upper to the lower aquifer. Abandoned and unused wells are of concern because they are not maintained and their locations may not be identified. Functioning wells are of concern because, if they were installed prior to 1975, they may not meet the current well standards which require a 50 foot sanitary seal.

Activities Related to the Causes of Contamination in South County

- 5.12. Waste water treatment facilities such as municipal treatment plants, package plants and other alternative treatment systems are all potential sources of groundwater contamination in South County depending upon the volume and quality of the quality of the effluent and the possibility of malfunction of the system. Each system provides adequate treatment of wastewater prior to disposal so as not to threaten groundwater quality.
- 5.13. Septic tank leachfields are sources of nitrates and potential sources of coliform bacteria, septic tank degreasers (TCA) and other substances which can contaminate groundwater. A septic system's impact on water quality directly relates to the intensity of the use(s), cumulative effects that may result from a number of septic systems in a small area, soil conditions, presence of high groundwater and proximity to streams.
- 5.14. Agricultural activities using pesticides and fertilizers and intensive livestock operations can contribute to surface and groundwater contamination from infiltration of salts (especially nitrates), metallics, and organics.
- 5.15. Spills or leaks of hazardous materials and waste from storage, handling and disposal can be a threat to groundwater quality. Existing underground storage tanks appear to be of greater concern than above-ground storage tanks, as it is more difficult to readily identify an underground spill or leak.
- 5.16. Leachate from improperly located or managed solid waste disposal sites can be a threat to the quality of groundwater.
- 5.17. Abandoned and unused wells can serve as conduits to transfer contaminated water from the upper to the lower aquifer.
- 5.18. Illegal dumping of hazardous materials and wastes can be a threat to groundwater quality.
- 5.19. There is currently no coordination among local and other responsible agencies in enforcing hazardous material and waste management.

Solid Waste and Disposal

- 5.20. Solid waste in South County is currently picked up in Morgan Hill, Gilroy, and in some portions of the County, taken to the San Martin Transfer station for sorting, compaction, and then transported to the Pacheco Pass landfill for disposal.
- 5.21. A first-time household hazardous waste collection program sponsored by Morgan Hill, Gilroy, the County, and South Valley Refuse Disposal Company was carried out in early May, 1986.

Transportation of Hazardous Materials and Waste

- 5.22. The Department of Transportation and the California Highway Patrol have the responsibility of notifying the effected jurisdictions in the event that hazardous materials or waste are spilled while being transported.
- 5.23. Hazardous materials and waste are transported on the same roads that are designated for all truck travel.
- 5.24. Spills or leaks of hazardous materials and waste while being transported can be a threat to groundwater quality.

Shared Jurisdiction of Responsibilities and Control Measures

- 5.25. The Central Coast Regional Water Quality Control Board (RWQCB) has authority to adopt water quality control plans and prescribe waste discharge requirements in South County from Cochran Road south, while the San Francisco Bay Region RWQCB has a similar authority and covers from Cochran Road north. The Boards serve as the lead agencies for authorizing clean-up of waste spills and leaks which effect groundwater.
- 5.26. The State Department of Health Services (DOHS) has primary responsibility for state Superfund and Resource Conservation Recovery Act (RCRA) programs and for approving and monitoring sources of drinking water for systems with more than 200 connections. Like the Regional Board, DOHS has the authority to compel clean-up action by industry.
- 5.27. The County Health Department regulates water systems with 5 to 199 connections, and enforces the Hazardous Materials Storage Ordinance (HMSO) in unincorporated areas of the County. In addition, the County Health Department conducts tests in both large (5 to 199) and some small (1 to 4) water systems.
- 5.28. The County Health Department is working on a Memorandum of Understanding (MOU) with the State Department of Health Services (Toxics Division) whereby the County would act as an agent to DOHS in requiring users of hazardous materials and generators of hazardous waste to annually collect and provide data about the hazardous materials and waste. In addition, the County would monitor the job of the hazardous material and waste haulers. This information would be in addition to what is already required under the HMSO which pertains predominantly to the storage of hazardous materials and waste.
- 5.29. The Cities of Morgan Hill and Gilroy enforce their own HMSO's and also participate in a commercial and industrial pretreatment program administered through the City of Gilroy whereby certain chemical wastes and specified volumes of this waste must be pretreated prior to discharge into the sewage treatment system.

- 5.30. The Office of Joint Powers Pretreatment Program is responsible for administering the industrial and commercial hazardous waste pretreatment programs in Morgan Hill and Gilroy. The Office has jurisdiction over hazardous materials and waste entering the sewer system and makes regular inspections of the sites in the program.
- 5.31. The Hazardous Materials Specialists from Morgan Hill, Gilroy, and the County regularly inspect activities that use hazardous materials and generate hazardous waste, including above and underground storage tanks and related equipment, to ensure compliance with each of the Cities' and the County's HMSO's. The responsibility of the Cities and County's Hazardous Materials Specialists are of larger scope than that of the Pretreatment Specialist as their inspections include all potential areas of vulnerability to water contamination and not just what may enter the sewer system. The Specialists from Morgan Hill and Gilroy frequently share information with the Pretreatment Inspector and occasionally conduct joint inspections.
- 5.32. In both of the Cities, there are full cost recovery programs administered through the RWQCB which require full reimbursement from the violator in the event of a spill. In Gilroy, the fire marshall acts as an agent to the RWQCB and administers this full cost recovery program, while in Morgan Hill, the RWQCB administers the program.
- 5.33. The Santa Clara Valley Water District (SCVWD) is charged with assuring an adequate supply of safe water in Santa Clara County. The SCVWD is responsible for issuing permits for the construction and destruction of wells, sealing abandoned and unused wells, and issuing permits for and inspecting monitoring wells at underground hazardous storage sites.
- 5.34. The RWQCB is working with the SCVWD on a Memorandum of Understanding (MOU) whereby the SCVWD is an agent to the RWQCB in cleaning up small leaks and spills of fuel.
- 5.35. The Gavilan Water Conservation District (GWCD) is charged with assuring an adequate supply of safe water to the residents within its service area in South County. Between the two Water Districts having jurisdiction in South County, there is overlapping jurisdiction. However, both appear to serve a needed purpose in South County.
- 5.36. The California Highway Patrol and the Department of Transportation are responsible for clean-up of hazardous materials and waste spills on state highways.

Legislation Relating to Water Quality

- 5.37. Assembly Bill (AB) 1803, passed in 1984, mandated (one time) testing for volatile organic contaminants and other individual contaminants. In Santa Clara County, testing was completed in all 19 large water systems in 1985. The AB 1803 process, however, provides no funding for testing of systems with less than 5 connections.
- 5.38. Assembly Bill (AB) 2185, which has not yet been implemented in the cities or county, would require that a business using hazardous materials and/or generating hazardous waste have a business plan describing who would be contacted (e.g., police, fire, etc.) in the event of a spill, leak, or release. In addition, AB 2185 would require the collection and report of data relating to hazardous materials usage and discharge. This information collected would be in complement with the intents of the MOU between DOHS and the County Health Department.

Monitoring Drinking Water Wells for Water Contamination

- 5.39. The City of Gilroy is testing several private and public wells for nitrates, PCE, TCA, and other contaminants and has found some traces of PCE from dry cleaning businesses and TCA from sources not yet clearly indentified.
- 5.40. The County Health Department has recently conducted tests for volatile organics (PCE, TCE, TCA, benzene, etc.) in well systems with 1 to 4 connections, and so far, has not found any positive evidence of contamination in South County.
- 5.41. The County Health Department will soon begin testing for organic, bacteriological, inorganic, and radiological contaminants in 1200 wells in Santa Clara County of which a significant number are in South County.
- 5.42. The Gavilian Water Conservation District has recently completed a study of nitrates and total dissolved solids (TDS) in the Llagas subbassin. From the results, it appears that the relatively poorer water quality identified in the subbasin, as indicated by elevated nitrate and TDS concentrations, is generally in shallow formations.
- 5.43. There are several private water companies in South County (West San Martin Water Works, Twin Valley Water Company, etc.) which have the responsibility of delivering safe water to their customers.
- 5.44. There are two public water companies in South County, one in Morgan Hill and the other in Gilroy.

Interjurisdictional Agreements

- 5.45. There are currently no interjurisdictional agreements among Morgan Hill, Gilroy, the County, the two Water Districts and the two Regional Boards regarding the protection of water quality in South County.
- 5.46. The inspector from the Office of Joint Powers Pretreatment and the Hazardous Materials inspectors from the Cities of Morgan Hill and Gilroy do frequently exchange pertinent information and occasionally conduct joint inspections.
- 5.47. No final agreement has been reached between Morgan Hill and Gilroy as to the best method to increase and fund additional sewage treatment capacity.

INFRASTRUCTURE: WATER QUALITY AND SUPPLY7. Water Supply

New development should not exceed the water supply, and use of water should be made more efficient through appropriate means, such as watershed protection, percolation, reclamation, and conservation.

- 7.1. Each agency and jurisdiction responsible for well monitoring should continue to monitor wells and provide the results to a central agency (yet unknown) which would coordinate the data and make it available to all jurisdictions and agencies.
- 7.2. Programs to identify and seal abandoned and unused wells should be continued, as they may be prime sources for transferring contaminants from the upper to lower aquifer.
- 7.3. Programs for monitoring private wells should continue to occur and should continue to expand the scope of testing by including tests of more wells and including tests on constituents not yet tested in private wells (i.e., volatile organics, bacteriological, radiological, etc.).
- 7.4. Each jurisdiction and agency pumping water from wells should be responsible for knowing the demand that its well pumping imposes on the direction of flow of water and how it affects others that are pumping from the same aquifer.
- 7.5. Each jurisdiction and agency pumping water from wells should consider accepting the concept of "managing the aquifer" so as to secure its utility as a water resource and ensure the water's quality.
- 7.6. Streambeds and other appropriate percolation areas should be protected.
- 7.7. There should be continuing coordination among the South County jurisdictions and the Santa Clara Valley Water District to assure that the South County will get sufficient deliveries of San Felipe water as needs require.
- 7.8. The two water districts should continue developing cooperative programs to assure effective management of the water resources, such as well monitoring and percolation of imported water.

8. Water Quality

Water quality should be protected from contamination, and should be monitored to assure that present policies and regulations are adequate. Such uses as waste facilities, septic systems and industries using toxic chemicals should be prohibited where polluting substances may come in contact with groundwater, floodwaters, and creeks or reservoir waters.

- 8.1. Land use policies should be continued that limit the number of individual septic systems in areas vulnerable to groundwater contamination, because of the potential for cumulative degradation of water quality.
- 8.2. Large lot policies, which allow minimal development and limited numbers of septic systems in small areas, should be continued in areas where development is expected to be served by sewers. This approach makes it possible to design future urban density subdivisions with smaller lots which are more efficient for sewers in terms of service and cost.
- 8.3. In the unincorporated area current County policies regarding septic systems and land use should be continued with no lessening of standards.
- 8.4. Groundwater and surface water quality conditions throughout the South County should be monitored to determine if changes in regulations regarding septic systems and land use are needed.

Protection of groundwater quality requires continued caution in the siting of landfills and transfer stations and rigorous enforcement of local and regional regulations.

- 8.5. Continued caution should be taken as to the siting of landfills, the construction of landfills (i.e., they should have clay liners, etc.), and the waste allowed in a sanitary landfill in South County so as not to create hazards to groundwater quality.
- 8.6. Continued caution should be taken as to the siting of transfer stations in South County so as not to create hazards to groundwater quality.
- 8.7. Regulations relating to solid waste disposal should continue to be rigorously enforced by the local jurisdictions and by the Regional Water Quality Control Boards.
- 8.8. Periodic household hazardous waste collection programs and other related activities should occur on a regular basis in order to limit the types and amounts of hazardous waste entering the ordinary waste stream.

- 8.9. The jurisdictions in South County should work jointly and with other jurisdictions to achieve a balance between potential negative impacts and the benefits associated with the location of solid waste disposal sites and transfer stations.

9. Hazardous Materials and Waste Management

A program of regular inspections and monitoring to ensure compliance with local regulations should be continued in order to reduce the risks associated with the use and handling of hazardous materials and wastes.

- 9.1. The Cities' Hazardous Materials Specialists and Pretreatment Inspector, and the County Health Department should continue to inspect regularly activities that store and/or use hazardous materials, including above-ground and underground storage tanks and related equipment, to ensure compliance with each City's and the County's Hazardous Materials Storage Ordinance (HMSO).
- 9.2. There should be regular inspections of those facilities which store hazardous waste on site for less than 90 days, a time period for which a hazardous materials storage permit is not required. This inspection could be enforceable via the Memorandum of Understanding between Department of Health Services (DOHS) and County Health Department, whereby the County Health Department would act as an agent of DOHS in enforcing this aspect of the Hazardous Materials Storage Ordinance (HMSO).
- 9.3. Submittal of a hazardous materials handling plan should be a prerequisite for developments requiring zone changes, use permits, etc.
- 9.4. In order to minimize potential hazards, generators of hazardous waste should be required to use on-site pretreatment prior to discharging waste into the sewer system. The methods may include neutralization, precipitation and oxidation.
- 9.5. Small generators of hazardous waste should be helped to find ways to decrease their hazardous waste load either by pretreatment and/or use of less hazardous constituents.
- 9.6. Vehicles and other equipment that may threaten the quality of water from leaking fuel tanks or oil spills should be removed from the site and/or repaired.
- 9.7. Public education regarding hazardous materials and waste management should be coordinated and implemented among the local jurisdictions (Morgan Hill, Gilroy, the County), local agencies (SCVWD, GWCD, RWQCBs, etc.) and local groups (League of Women Voters, Lions Club, etc.).

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9.8. During the implementation of "AB 2185" (Calif. Health and Safety Code Chap. 6.95 Division 20 Section 25500 et seq) and successor legislation in South County, every effort should be made to achieve maximum integration between newly-mandated actions and elements and ongoing programs (e.g., Hazardous Waste Generator Inspections and pretreatment), particularly as they apply to:

- a. coordinated permit and fee structure,
- b. coordinated inspections,
- c. emergency response ("business") plans,
- d. training programs,
- e. evacuation requirements, and
- f. information requirements.

The transportation of hazardous materials and wastes should be monitored to reduce risks and ensure notification of South County Cities in the event of a leak or spill.

- 9.9. The South County jurisdictions should require that they receive reports from the Department of Transportation and the California Highway Patrol regarding spills or leaks on the highway.
- 9.10. If a spill occurs while transporting hazardous materials or waste in one of the Cities or the County, the other jurisdictions should be notified by that jurisdiction.
- 9.11. The Cities and County should consider designating specific transportation routes for the conveyance of hazardous materials and waste, if the jurisdiction desires hazardous materials and waste to be transported on other transportation routes.
- 9.12. The County should consider implementing a Memorandum of Understanding (MOU) between the Department of Health Services (DOHS) and the County Health Department whereby the County would act as an agent in requiring hazardous material users and waste generators to provide annual records and in monitoring the haulers of hazardous materials and waste.
- 9.13. To reduce the risk involved in transporting hazardous waste and to decrease the volume of waste that must be disposed of, generators of hazardous waste should be encouraged to use on-site pretreatment, such as: neutralization, precipitation and oxidation.

10. Intergovernmental Coordination: Water Quality/Hazardous Materials

Intergovernmental coordination between the Cities, the County and local agencies should be considered as an effective means of resolving issues of concern and investigating the feasibility of compatible standards, ordinances and enforcement procedures.

- 10.1. The two Regional Water Quality Control Boards that have jurisdiction in South County should reach agreement upon compatible water quality standards for South County, as compatible standards would be less confusing to developers and owners of land and to jurisdictions which must carry out the Regional Boards' regulations.
- 10.2. The two Water Districts which have jurisdiction in South County should reach agreement upon respective responsibility and jurisdiction of water supply and quality so as not to duplicate their efforts.
- 10.3. Regular meetings should be held between the two Regional Water Quality Control Boards (RWQCB), the two Water Districts, County Health Department, County Executive's Office, County Planning Office, Gilroy Planning Department, Morgan Hill Planning Department, San Martin Planning Committee, and any other key agency which is interested, to discuss the current issues and concerns relative to South County's water supply and quality.
- 10.4. The Cities, County, Regional Water Boards and local agencies should have compatible ordinances (i.e., HMSOs), standards (i.e., septic tank and alternative treatment and disposal methods), and enforcement procedures (i.e., implementing "AB 2185" [Calif. Health and Safety Code Chap. 6.95 Division 20 Section 25500 et seq], etc.) regarding water quality so that there is no advantage for a company to locate in an area with lower standards.

REPORT FOR SOUTH COUNTY JOINT PLANNING COMMITTEE

ON

WATER QUALITY

DRAFT FINDINGS AND RECOMMENDATIONS

Eric Carruthers

Lorraine J. Poggione

May 12, 1986 (revised)

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5. Interaction of Wells and Aquifers
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WATER QUALITY

Please note: revision shows added text underlined
and deleted text ((double parentheses))

II. FINDINGS

1. Natural Water System and Supply

- a. One Hundred percent of South County's water needs are presently met by groundwater.
- b. The water is drawn from underground aquifers which are water bearing strata located in both confined (water bearing strata overlayed by relatively impermeable geologic formations) or unconfined (not protected by impermeable geologic formations) subsurface zones of the Llagas Subbasin.
- c. Water reaches the aquifers via percolation through the soils. The sources of water that replenish the aquifers are from: rainfall and runoff (natural recharge) and locally conserved and imported water (artificial recharge).
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3. Points of Vulnerability

Contaminants have easy access to groundwater in:

- a. Areas of high groundwater where conduits (i.e. wells) or highly permeable soils serve as a pathway for contaminants in the surface water to travel to the groundwater.
- b. Areas of rapid percolation where the soils rapidly percolate contaminated water.
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- e. Areas upgradient of the confined aquifer (around Morgan Hill and San Martin) where the aquifer is unprotected by impermeable layers that normally would shield the aquifer from receiving contaminated waters (see attached map).
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conduits to transfer contaminated water from the upper to the lower aquifer. Abandoned and unused wells are of concern because they are not maintained and their locations may not be identified, while functioning wells are of concern because if they were installed prior to 1975 they may not meet the current well standards requiring a 50 foot sanitary seal.

4. Activities Related to the Causes of Contamination in South County

- a. Waste water treatment facilities such as municipal treatment plants, package plants and other alternative treatment systems are all potential sources of groundwater contamination in South County depending upon the volume and quality of the effluent and the possibility of malfunction of the system. Each system provides adequate treatment of waste water prior to disposal so as not to threaten groundwater quality.
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- h. There is currently no coordination among local and other responsible agencies in enforcing hazardous material and waste management.

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- a. The Department of Transportation and the California Highway Patrol have the responsibility of notifying the effected jurisdictions in the event that hazardous materials or waste are spilled while being transported.
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- b. A first-time household hazardous waste collection program sponsored by Morgan Hill, Gilroy, the County, and South Valley Refuse Disposal Company is scheduled to pick up household hazardous waste in early May.

7. Shared Jurisdiction of Responsibilities and Control Measures

- a. The Central Coast Regional Water Quality Control Board (RWQCB) has authority to adopt water quality control plans and prescribe waste discharge requirements in South County from Cochran Road south, while the San Francisco Bay Region RWQCB has a similar authority and covers from Cochran road north. The Boards serve as the lead agencies for authorizing cleanup of waste spills and leaks which effect groundwater.
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- l. The California Highway Patrol and the Department of Transportation are responsible for cleanup of hazardous materials and waste spills on state highways.

8. Legislation Relating to Water Quality

- a. Assembly Bill (AB) 1803, passed in 1984, mandated (one time) testing for volatile organic contaminants and other individual contaminants. In Santa Clara County, testing was completed in all 19 large water systems in 1985. The AB 1803 process, however, provides no funding for testing of systems with less than 5 connections.
- b. Assembly Bill (AB) 2185, which has not yet been implemented in the cities or county, would require that a business using hazardous materials and/or generating hazardous waste have a business plan describing who would be contacted (ie police, fire, etc) in the event of a spill, leak, or release. In addition, AB 2185 would require the collection and report of data relating to hazardous materials usage and discharge. This information collected would be in complement with the intents of the MOU between DOHS and the County Health Department.

9. Monitoring Drinking Water Wells for Water Contamination

- a. The City of Gilroy is testing several private and public wells for nitrates, PCE, TCA, and other contaminants and has found some traces of PCE from dry cleaning businesses and TCA from sources not yet clearly identified.
- b. The County Health Department has recently conducted tests for volatile organics (PCE, TCE, TCA, benzene, etc.) in well systems with 1 to 4 connections and so far has not found any positive evidence of contamination in South County (see accompanying segment of private well report.)

- c. The County Health Department will soon begin testing for organic, bacteriological, inorganic, and radiological contaminants in 1200 wells in Santa Clara County of which a significant number of them are in South County.
- d. The Gavilan Water Conservation District has recently completed a study of nitrates and total dissolved solids (TDS) in the Llagas subbasin and according to the results, it appears that the relatively poorer water quality identified in the subbasin, as indicated by elevated nitrate and TDS concentrations, is generally in shallow formations.
- e. There are several private water companies in South County (West San Martin Water Works, Twin Valley Water Company, etc.) which have the responsibility of delivering safe water to its customers.
- f. There are two public water companies in South County, one in Morgan Hill and the other in Gilroy.

10. Interjurisdictional Agreements

- a. There are currently no interjurisdictional agreements among Morgan Hill, Gilroy, the County, the two Water Districts, and the two Regional Boards regarding the protection of water quality in South County.
- b. The inspector from the Office of Joint Powers Pretreatment and the Hazardous Materials inspectors from the Cities of Morgan Hill and Gilroy do frequently exchange pertinent information and occasionally conduct joint inspections.
- c. No final agreement has been reached between Morgan Hill and Gilroy as to the best method to increase and fund additional sewage treatment capacity.

III. RECOMMENDATIONS

1. Long Range Waste Water Treatment

- a. The cities of Gilroy and Morgan Hill should determine the best method to increase and fund their sewer treatment capacity in order to facilitate development that is consistent with their general plans.
- b. The County's and the two Water Districts roles, if any, in the cities' waste water treatment program should be determined.
- c. San Martin's sewage treatment needs should be determined with consideration given to economic, population, land use, and local government implications.
- d. Beyond the proposals currently under consideration, (Casa de Fruta and Nob Hill Family Park, which have been accepted in concept), no new land uses requiring the use of alternative sewage treatment and disposal systems, other than septic tanks, should be permitted until a more reliable track record has been established.
- e. The Joint Powers Pretreatment Program for industrial and commercial hazardous material users and/or hazardous waste generators should continue to be implemented in the two cities.

2. Hazardous Materials and Waste Management

- a. The Cities' Hazardous Material Specialists and Pretreatment Inspector, and the County Health Department should continue to regularly inspect activities that store and/or use hazardous materials, including the above and under ground storage tanks and related equipment, to ensure compliance with each cities and county Hazardous Materials Storage Ordinance (HMSO).
- b. Regularly inspect those facilities that store hazardous waste on site for less than 90 days which does not require a hazardous material storage permit. This inspection could be enforceable via the Memorandum of Understanding, between Department of Health Services (DOHS) and County Health Department whereby the County Health Department would act as an agent to DOHS in enforcing this aspect of the HMSO.
- c. Require submittal of a hazardous materials handling plan as a prerequisite for developments requiring zone changes, use permits, etc.
- d. Generators of hazardous waste should continue to be encouraged to use on site pretreatment such as; neutralization, precipitation, and oxidation so as to decrease the volume of waste that must be disposed of, reduce the risk involved in transporting the waste and eliminate the hazard of

discharging it into the sewer treatment system.

- e. Existing and new small generators of hazardous waste that are not being addressed, should be helped in determining ways in which their hazardous waste load can be decreased either by pretreatment and/or use of less hazardous constituents.
- f. The Cities of Morgan Hill, Gilroy and the County should consider adopting AB 2185 as a means for each city and the county to have a business plan which describes actions to be taken in the event of a spill and requires annual records to be kept.
- h. If AB 2185 is adopted by the Cities and County, consideration should be in creating a single permit and a fee structure, which would include what is now a single permit for hazardous material storage and a business plan required under AB 2185.
- i. The SCVWD should consider implementing a Memorandum of Understanding (MOU) between the RWQCB and the SCVWD whereby SCVWD would act as an agent to the RWQCB in cleaning up small leaks and spills of fuel.
- j. The Cities of Morgan Hill and Gilroy and the County should consider coordinating enforcement of each of the HMSO's and implementing AB 2185. In addition, consideration should be given to implementing this coordination as a "model program" for Santa Clara County.
- k. Vehicles and other equipment that may threaten the quality of water from leaking fuel tanks or oil spills should be removed from the site and/or repaired.
- l. Public education regarding hazardous materials and waste management should be coordinated and implemented amongst the local jurisdictions (Morgan Hill, Gilroy, the County), local agencies (SCVWD, GWCD, RWQCBs, etc) and local groups (League of Women Voters, Lions Club, etc.)

3. Transportation of Hazardous Waste

- a. The Department of Transportation and the California Highway Patrol should continue notifying effected jurisdictions of spills or leaks on the highway.
- b. If a spill occurs while transporting hazardous materials or waste in one of the cities or the county the other jurisdictions should be notified by that jurisdiction.
- c. The cities and county should consider designating alternate transportation routes for the travel of hazardous materials and waste, if the jurisdiction desires hazardous materials and waste to be transported on other transportation routes.
- d. The County should consider implementing a Memorandum of Understanding (MOU) between CDEH and the County Health Department whereby the County would act as an agent in requiring hazardous material users and waste generators to provide annual records and monitoring the haulers of hazardous materials and waste.

4. Solid Waste Disposal Sites and Transfer Stations

- a. Continued caution should be taken as to the siting of landfills, the construction of landfills (ie: they should have clay liners etc.), and the waste allowed in a sanitary landfill in South County so as not to create hazards to groundwater quality.
- b. Continued caution should be taken as to the siting of transfer stations in South County so as not to create hazards to groundwater quality.
- c. Regulations relating to solid waste disposal should continue to be rigorously enforced by the local jurisdictions and by the Regional Water Quality Control Boards.
- d. Periodic household hazardous waste collection programs and other related activities should occur on a regular basis in order to limit the types and amounts of hazardous waste entering the ordinary waste stream.

5. Interaction of Wells and Aquifers and How They ^AEffect Water Quality

- a. Each agency and jurisdiction responsible for well monitoring should continue to monitor wells and provide the results to a central agency (yet unknown) which would coordinate the data and make it available to all jurisdictions and agencies.
- b. Programs to identify and seal abandoned and unused wells should be continued, as they may be prime sources for transferring contaminants from the upper to lower aquifer.
- c. Programs for monitoring private wells should continue to occur and should continue to expand the scope of testing by including tests of more wells and including tests on constituents not yet tested in private wells, ie: volatile organics, bacteriological, radiological, etc.
- d. Each jurisdiction and agency pumping water from wells should be responsible for knowing the demand that their well pumping imposes on the direction of flow of water and how it effects others that are pumping from the same aquifer.
- e. Each jurisdiction and agency pumping water from wells should consider accepting the concept of "managing the aquifer" so as to secure its utility as a water resource and ensure the water's quality.

6. Land Use Decisions Regarding Septic Systems and How They Effect water quality

- a. Land use policies should be continued that limit the number of individual septic systems in areas vulnerable to groundwater contamination, because of the potential for cumulative degradation of water quality.
- b. Large lot policies, which allow minimal development and limited numbers of septic systems in small areas, should be continued in areas where development is expected on sewers, as this approach makes it possible to design future urban density subdivisions with smaller lots which are more efficient for sewers in terms of service and cost.

7. Intergovernmental Coordination

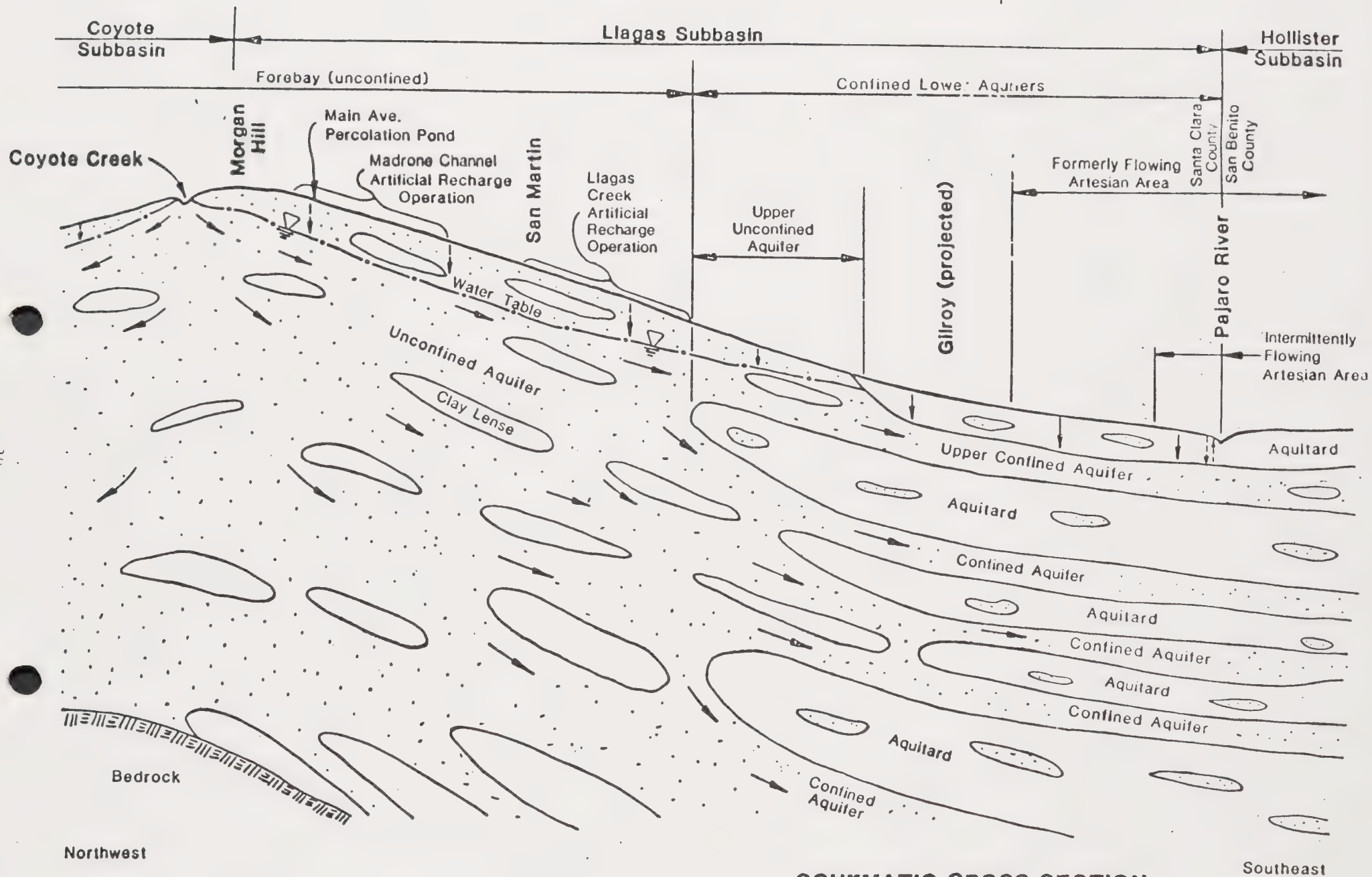
- a. The two Regional Water Quality Control Boards that have jurisdiction in South County should consider reaching agreement upon compatible water quality standards for South County as compatible standards would be less confusing to developers and owners of land and to jurisdictions who must carry out the Regional Boards regulations.
- b. The two Water Districts that have jurisdiction in South County should consider reaching agreement upon respective responsibility and jurisdiction of water supply and quality so as not to duplicate their efforts.
- c. Consideration should be given to having regular (quarterly) meetings between the two RWQCB's, two Water Districts, County Health Department, County Executive's Office, County Planning Office, Gilroy Planning Department, Morgan Hill Planning Department, San Martin Planning Committee, and any other key agency interested to discuss the current issues and concerns relative to South County's water supply and quality.
- d. The cities, county and local agencies should consider having compatible ordinances (i.e. HMSOs), standards (i.e. septic tank and alternative treatment and disposal methods, and enforcement procedures (ie implementing AB 2185, etc) regarding water quality so there is no advantage for a company to locate in an area with lower standards.

SOUTH COUNTY JOINT PLANNING PROGRAM

May 2, 1986

Persons reviewing the Water Quality Draft Findings and Recommendations:

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Lee Esquivel	Santa Clara County Health Department
Glen Heildebrand	Santa Clara County Health Department
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Jay Cano	Central Coast Regional Water Quality Control Board
Bill Leonard	Central Coast Regional Water Quality Control Board
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**SCHEMATIC CROSS SECTION
OF WATER BEARING STRATA
IN SOUTH SANTA CLARA COUNTY**

Arrows denote direction of groundwater movement

1963-1964-1965-1966-1967-1968-1969-1970-1971-1972-1973-1974-1975-1976-1977-1978-1979-1980-1981-1982-1983-1984-1985-1986-1987-1988-1989-1990-1991-1992-1993-1994-1995-1996-1997-1998-1999-2000-2001-2002-2003-2004-2005-2006-2007-2008-2009-2010-2011-2012-2013-2014-2015-2016-2017-2018-2019-2020-2021-2022-2023-2024-2025

SANTA CLARA COUNTY PRIVATE WELL SAMPLING PROGRAM

FINAL REPORT

Santa Clara County Health Department

Sponsored By: S.F. Bay Regional Water Quality Control Board

January 1986.

(This is an excerpt from the report and those portions that apply to the Water Quality report are included here)

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1. SUMMARY

The Santa Clara County Private Well Sampling Program was a pilot study to investigate the presence of contamination in private wells. Private wells were not included in past well contamination studies done by the State, nor are private wells included in the small system studies to be implemented under AB 1803 in 1986. Private wells supply only a small percentage of drinking water in the County. However, it should be recognized that the potential health hazard to those individuals using water of undetermined quality over an extended period of time could be very significant.

The RWQCB provided \$50,000 for organic chemical analysis of water samples. The Santa Clara County Health Department (SCCHD) provided program staff and covered the cost of bacteriological analyses.

One hundred seventy one wells throughout the county were analyzed for organic chemicals and bacteriological contamination. These wells were chosen from areas near known incidents of groundwater contamination due to organic chemical releases from industries.

The physical task of collecting samples from private wells was more difficult than had been expected. This was due, in part, to the presence on the sampling list of many non-operational wells, broken appointments and the absence of suitable sampling taps. As a result, 171 wells were sampled from a total of 268 which were initially considered.

The Private Well Sampling Program produced some results which were not initially anticipated. Bacteriological contamination at private wells was found to be more widespread than was originally expected, while the presence of organic chemicals was less prevalent than had been expected.

As anticipated, wells with depths reported by owners to be less than 150 feet were found to be positive for organic chemical contamination more frequently (10.8%) than wells with depths greater than 150 feet (4.9%).

The Private Well Sampling Program was a success. Not only were the scientific objectives met, the program also was a good example of how local and State agencies can work together to solve problems. The data and conclusions generated by this study will be useful in projecting the costs and potential results of any additional private well study programs.

2. BACKGROUND AND OBJECTIVES OF PROGRAM

Prior to 1981, the major recognized threat to groundwater in the South Bay Area came from depletion of the aquifer due to overuse, or from related problems of saltwater intrusion. In the fall of 1981, a new threat to local groundwater came to the public's attention when a major electronics firm in South San Jose discovered that an underground chemical storage tank had leaked

several thousand gallons of waste solvent into the groundwater. A municipal well in the area was found to be contaminated with 1,1,1 trichloroethane (TCA). Subsequent investigation at other companies resulted in identification of additional leaks from similar underground storage tanks throughout the Santa Clara Groundwater Basin.

As a result of these leaks, the Regional Water Quality Control Board-San Francisco Bay Region (RWQCB) developed a program to detect groundwater contamination. Soil and groundwater investigations were required at those sites with a high probability of having subsurface hazardous material releases. Local Hazardous Materials Storage Ordinances also required groundwater monitoring around many underground tanks. Contamination of the groundwater was detected at many of the sites where investigations were performed. Sampling of municipal and private wells adjacent to these site investigations revealed contaminated wells.

In California, all public water systems with greater than 199 service connections are regulated by the State Department of Health Services through its Sanitary Engineering Branch (SEB). These are termed "Large Public Water Systems". Those systems with 5 to 199 connections are regulated by the Santa Clara County Health Department (SCCHD) and are called "Small Water Systems". There is no ongoing program for monitoring and regulating the activities of private water systems having 1 to 4 connections.

AB 1803, passed in 1984, mandated testing of all water systems in the State with 5 or more connections for volatile organic chemicals and other industrial contaminants. In Santa Clara County, testing was completed of all 19 large systems in 1985, and will begin in early 1986 for some 200 small systems. The AB 1803 process, however, provides no funding for tests of systems with fewer than 5 connections.

The Safe Water Council of Santa Clara County was concerned that private drinking water wells were not being tested under the AB 1803 program. Many of these wells were felt to be particularly vulnerable to contamination since they are shallow. In an effort to address the potential public health impacts of organic chemical contamination in private wells (1-4 connections), and to gather further information on groundwater quality in high-priority areas of Santa Clara County, the RWQCB and the County of Santa Clara agreed in 1985 to cooperate in a pilot testing program for private wells. Supported by the State Water Resources Control Board, the RWQCB agreed to provide a \$50,000 fund for analytical testing of water samples from designated private wells in two groundwater basins; the Santa Clara and the Coyote. The Santa Clara County Health Department would provide the personnel necessary to identify the wells to be tested, select the laboratory to do the analyses, develop sampling procedures, perform the sampling, deliver samples to the laboratory, notify well owners of the results, submit reports, analyze the data, and make appropriate recommendations.

This report presents the final results from the pilot testing program of private wells. Records are on file at the Santa Clara County Health Department. This program was carried out by Linda Crawford who is a Registered Sanitarian on the staff of the Santa Clara County Health Department.

3. STUDY AREA

Three groundwater basins underlie the geographic area known as Santa Clara Valley: the Santa Clara, the Coyote, and the Llagas. The Santa Clara Basin is the northernmost of the three; bounded on the north by San Mateo County, San Francisco Bay, and Alameda County and reaching south to the Coyote narrows. The Coyote basin begins at the narrows and extends to near Morgan Hill. Both of these basins are under the jurisdiction of the Regional Water Quality Control Board - San Francisco Bay Region. The Llagas basin, which is under the jurisdiction of the Regional Water Quality Control Board - Central Coast Region, begins near Morgan Hill and extends to the South.

The Santa Clara Groundwater Basin is an alluvial system made up of alternating clay layers and water bearing zones extending from the ground surface to depths of 500 feet or more. This basin is the largest of the three basins and provides approximately 50% of the water used in the Santa Clara Valley.

4. WELL SELECTION PROCEDURE

Based on preliminary cost estimates for laboratory analysis it was felt that \$50,000 would provide for sampling and analysis of approximately 100 wells, out of the 3,400 registered private wells shown in the Santa Clara Valley District's (SCVWD) records as being used for domestic purposes. Therefore, a priority list for sampling had to be developed.

The goal was to select 100 wells that would best provide new data on the possible spread of previously-identified plumes of groundwater contamination, and would also provide further water quality data needed to protect the public health. With this in mind, the initial 100 wells were selected primarily within a one-mile radius of the 30 chemical spills ranked highest in the RWQCB's preliminary 205j Report: "Assessment of Contamination From Leaks of Hazardous Materials In the Santa Clara Groundwater Basin" (February 1985). These wells were not within known plumes of contamination. An attempt was made to confine the sampling to private wells drawing only from the shallow aquifer (less than 150' deep). These were the wells deemed most vulnerable to contamination. Several spill sites in the Mountain View and Palo Alto areas were not included in the initial 205j report, although the RWQCB had information on them. Since many active private wells are located in these areas, wells in these locations were also included in the sampling program.

The SCVWD maintains well records for the Santa Clara and Coyote groundwater basins, and was able to provide a list and location map of 100 wells using the above criteria. The wells selected for sampling were located in the following cities: Palo Alto, Mountain View, Sunnyvale, Santa Clara, San Jose, Morgan Hill, and Los Altos.

In an effort to include the Llagas Groundwater Basin, located to the south of the Santa Clara and Coyote Groundwater basins, County Health Department staff contacted Hazardous Materials Coordinators in Gilroy, Morgan Hill, and Santa Clara County. Contact was also made with the Gavilan Water Conservation District and the Central Coast RWQCB. One spill site in the Llagas Groundwater basin has known soil contamination of PCE, TCA, and TCE, and is under clean-up orders. Because of questions regarding the history of this spill, the Central Coast Region RWQCB felt that wells within a mile of this site should be tested. Since the groundwater gradient in this area flows vigorously to the south, only wells within a one mile radius to the site's south were sought. Gavilan Water Conservation District was able to identify one private well, located near Morgan Hill, which met these criteria.

Additionally, five wells not provided by either water district were added to the initial list. Two of these wells were in San Jose, two were in Mountain View, and one was in Palo Alto. In most cases these wells were identified by property owners while

on-site sampling of a nearby registered well was being conducted. Hence a total of 106 wells were included in the initial round of sampling.

After the 106 well owners were contacted, it was determined that only 70 wells could be sampled. The remaining 36 wells were not sampled for a variety of reasons including: well not operational, no suitable sampling point, unable to locate well, refusal by owner, or well already being tested by others.

After these 70 wells were sampled sufficient funds remained to allow initiation of a second phase of sampling, primarily because less follow-up laboratory analysis was needed than had initially been anticipated. The Santa Clara Valley Water District identified an additional 150 wells for sampling. It was noted that one of these wells had appeared on the earlier list of 100 wells provided by SCVWD. The SCVWD attempted to use the same criteria in the selection of this second group of wells, except that these wells were dispersed more widely throughout the county rather than being restricted to a one mile radius of known spill sites. These wells were located in San Jose, Mountain View, Palo Alto, Sunnyvale, Los Altos, Los Altos Hills, Cupertino, Saratoga, Los Gatos, Campbell, Monte Sereno, Milpitas, and Santa Clara.

Along with the 150 wells identified by the SCVWD, an additional 6 were added to the list at the request of the San Francisco RWQCB. The RWQCB felt these wells were close enough to a site

investigation to be of some interest, but not so close as to require testing by the company involved.

Another seven wells were selected by the City of Gilroy, Department of Public Works. These were of specific interest to Gilroy officials due to their proximity to three city wells known to be contaminated with PCE.

During this second phase of sample collection, 62 wells from this list of 163 were not sampled for the same variety of reasons outlined in the description of phase one above.

Table I shows a listing by City of the number of wells included in this pilot program. Table I also shows the number of analyses done in each city. Table VII shows sampling information for each well, listed by State Well Number. Maps I, II and III show the locations of wells sampled.

5. LABORATORY SELECTION

Selection of an analytical laboratory for this study was done by competitive bid. A statewide list of laboratories certified for organics analysis was narrowed to those within the greater Bay Area. These laboratories were sent a letter requesting a bid on approximately 100 well samples, using methods equivalent to those used in the statewide AB 1803 municipal well monitoring program. These methods are suitable for detecting a wide variety of organic contaminants. Laboratories contacted were also asked to

11. CONCLUSIONS

1. Of the 171 wells tested, 13 indicated the presence of organic chemicals. This was approximately 7.6% of the total wells sampled. It was initially expected that this percentage would be greater since the wells are shallow and hence more easily impacted by leaks and spills.
2. Of the total organic chemical scans, five indicated the presence of vinyl chloride, trichloroethylene (TCE), tetrachloroethylene (PCE) or 1,1-dichloroethane (DCA) above State Action Levels. This was approximately 3% of the total private wells sampled. One of the five well sites with contaminant levels above SAL has since been connected to a municipal water supply, the owner of one site has elected to use bottled water for drinking and cooking purposes, and the owners of three sites are continuing to use the wells for irrigation with the residences being served by municipal water.
3. Of the 170 wells tested for bacteriological quality, 61 (approximately 36%) failed to meet State Drinking Water Standards. Bacteriological contamination of private wells is usually related to the absence of an adequate sanitary seal. It appears that private well users are much more likely to be exposed to bacteriological contamination than organic chemicals (36% vs 7.6%).

5. Each of the 13 wells which tested positive for organic chemicals in the first sample were also positive in the second sample. Concentrations found were, in all but one case, very similar in both the first and second samples. In the one case where the second sample varied greatly from the first, a third sample was obtained which showed levels very similar to the first.
6. An attempt was made to confine the sampling to private wells less than 150 feet deep. These wells are thought to be the most vulnerable to contamination. Eighty-three of the 171 wells tested (48.5%) were reported by the owners to be less than 150 feet deep, 61 (37.7%) were reported by the owners to be greater than 150 feet deep, and 27 (15.8%) are of an unknown depth. Nine of the 13 (69%) wells with detectable levels of organic chemicals were reported by the owners to be less than 150 feet deep, 3 (23%) more than 150 deep, and 1 (7%) is of an unknown depth. See Table IV for comparisons of depths of wells tested and depths of wells which were positive for organic chemicals.
7. Total project costs and per well costs were lower than originally expected. This was primarily because of the relatively small number of wells needing a second or third analysis due to detection of organic contamination in the first sample. The original expectation of 100 wells to be sampled was expanded to 171 due to this per well cost reduction.

TABLE I

Number of Wells and Methods of Analyses - By City

<u>City</u>	<u>Wells Sampled</u>	<u>Wells Not^a Sampled</u>	<u>EPA 601 Analysis</u>	<u>EPA 624 Analysis</u>	<u>EPA 625 Analysis</u>	<u>Acetone& Isopropanol</u>	<u>Bacteriological Analysis</u>
Campbell	1	2	0	1	0	1	1
Cupertino	2	1	0	2	1	2	2
Gilroy	7	0	0	7	1	0	7
Los Altos	3	4	0	3	1	3	3
Los Altos Hills	3	2	0	3	0	3	3
Los Gatos	4	3	1	4	1	4	4
Milpitas	9	0	0	9	3	9	9
Monte Serenio	1	1	0	1	1	1	1
Morgan Hill	1	0	0	1	0	0	1
Mountain View	17	16	5	16	5	16	16
Palo Alto	23	8	3	23	5	22	23
San Jose	77	45	5	77	14	53	77
Santa Clara	6	0	0	6	0	6	6
Saratoga	11	9	2	11	1	11	11
Sunnyvale	6	6	1	6	1	6	6
TOTAL	171	97	17	170 ^b	34	137	170 ^b

a. Could not be sampled. See Table VII for further explanation.

b. One well was sampled by E.P.A. 601 only. See "Sample Analyses" Section for further explanation.

TABLE II

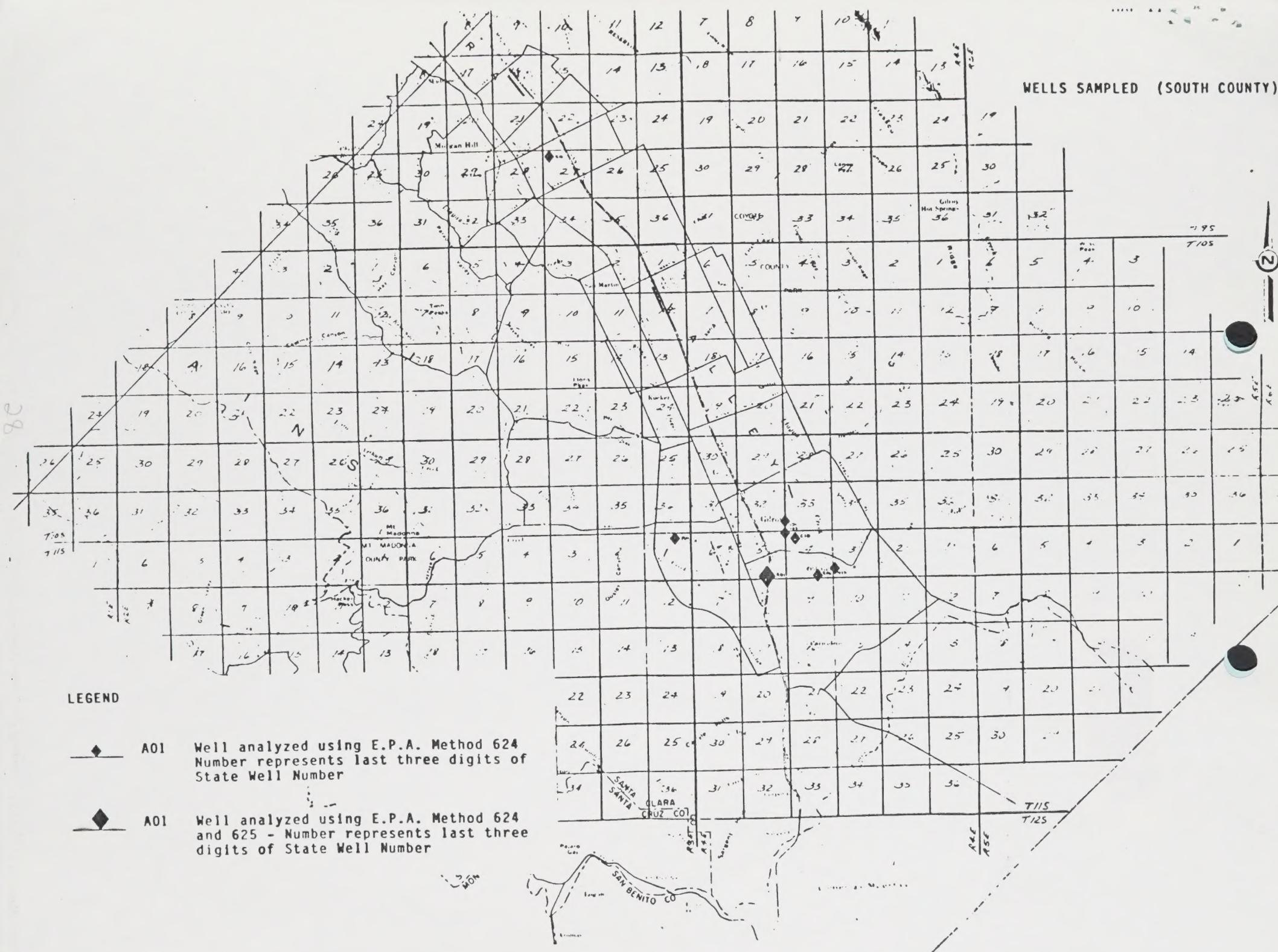
Test Results - Number of Wells With Organic
Chemical or Bacteriological Contamination^a

<u>City</u>	<u>Organic Chemical Contamination</u>		<u>Bacteriological Quality</u>	
	<u><SAL_b</u>	<u>>SAL_b</u>	<u>Meets State Standards</u>	<u>Fails To Meet State Standards</u>
Campbell	0	0	1	0
Cupertino	0	0	2	0
Gilroy	0	0	6	1
Los Altos	0	0	2	1
Los Altos Hills	0	0	3	0
Los Gatos	0	1	1	3
Milpitas	0	0	6	3
Monte Sereno	0	0	0	1
Morgan Hill	0	0	1	0
Mountain View	2	3	11	5
Palo Alto	3	0	13	10
San Jose	3	0	51	26
Santa Clara	0	0	4	2
Saratoga	0	0	6	5
Sunnyvale	0	1	2	4
TOTAL	8	5	109	61

a. All positive organic chemical results were confirmed by at least one additional sample.

b. SAL means State Action Level.

WELLS SAMPLED (SOUTH COUNTY)





U.C. BERKELEY LIBRARIES



C123305493

